MAT216 – Cálculo Diferencial e Integral III
Respostas da Lista de Exercícios 1

2. $f(x,y) = x^2 - x$.

5. (a) $f_x = y^2/(x^2+y^2)^{3/2}$, $f_y = -xy/(x^2+y^2)^{3/2}$. (b) $f_{x_k} = 2\sum_{i=1}^n a_{ki}x_i$. (c) $f_{x_k} = a_k$. (d) $f_{x_k} = 2x_k$.

6. (a) $a \cdot v/||v||$. (b) $2x \cdot v/||v||$.

7. (a) Usar $\frac{\partial f}{\partial(-v)}(p) = -\frac{\partial f}{\partial v}(p)$. (b) $f(x) = v \cdot x$.

8. (a) $(2x + y^3\cos(xy), 2y\sin(xy) + xy^2\cos(xy))$. (b) $e^x(\cos y, -\sin y)$. (c) $2(x,-y,z)$.

9. $-\sqrt{6}/3$.

10. Pontos $(-1,0)$ e $(1,0)$ com direções $(-1,0)$ e $(1,0)$, resp.

11. $\nabla f(1,2) = (2,2)$; $14/5$.

12. (b) $f(x,y,z) = (x^2+y^2+z^2)/2$.

13. (a) $-2/3$. (b) 0.

14. $x + 2y - \sqrt{5}z = 0$.

15. $y_0z_0x + z_0x_0y + x_0y_0z = 3$.

16. $N_1 = (2,4,-1)$, $N_2 = (2,6,-1)$, $v = (2,0,4)$; v é tangente à curva intersecção $S_1 \cap S_2$.

17. $x = t$, $y = -2 + 3t$, $z = 3 - 2t$ para $t \in \mathbf{R}$.

18. Valor aproximado 1. A calculadora fornece $0,98542$.